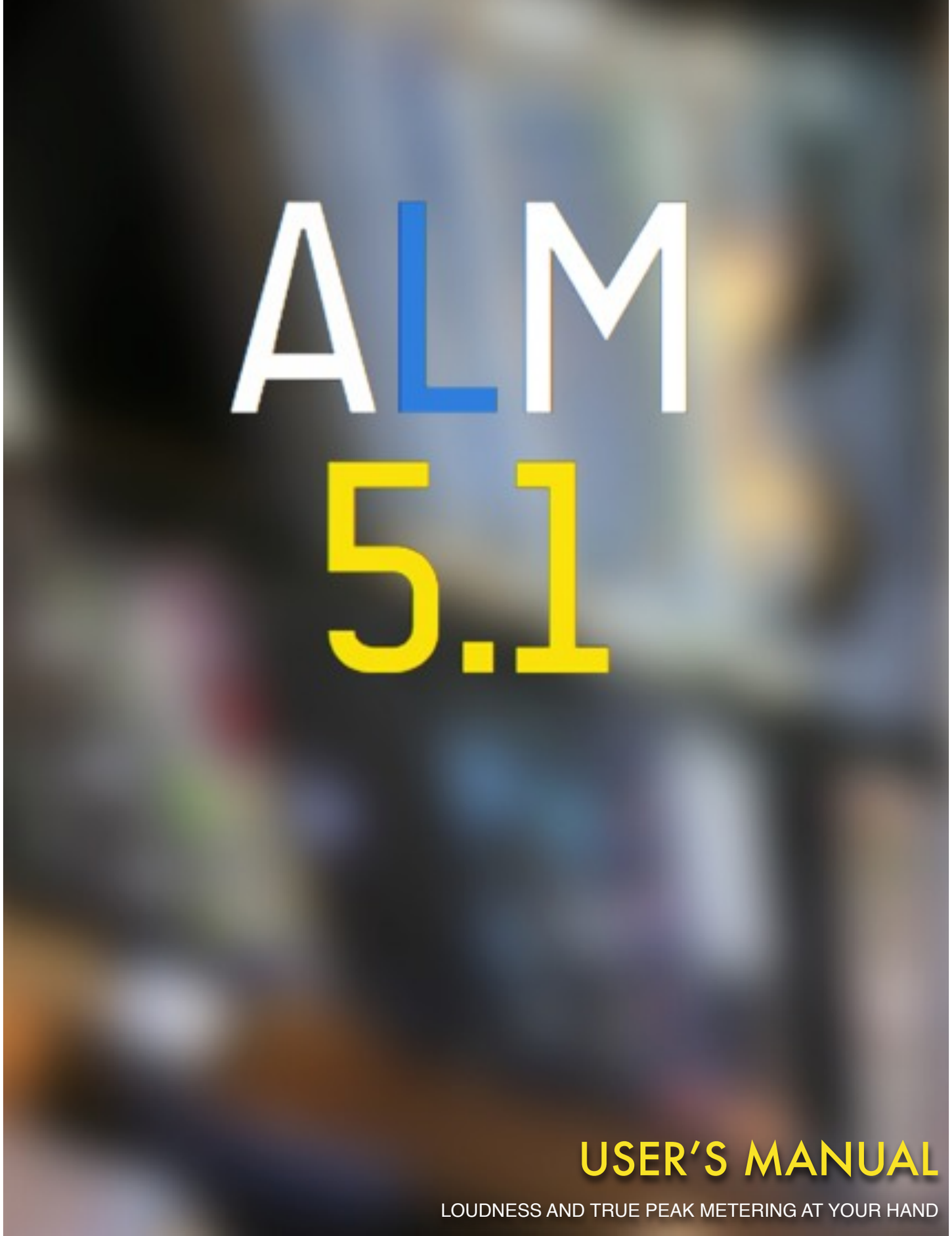
ALM
5.1
USER'S MANUAL
LOUDNESS AND TRUE PEAK METERING AT YOUR HAND

beDSP

User's Manual

ALM 5.1

Loudness and True Peak metering at your hand

Audio Loudness and True Peak Metering VST, AU and AAX plugin based on BS1770 (rev.3) and EBU R128. Now, you have a panoramic view of the main loudness descriptors anytime you need.

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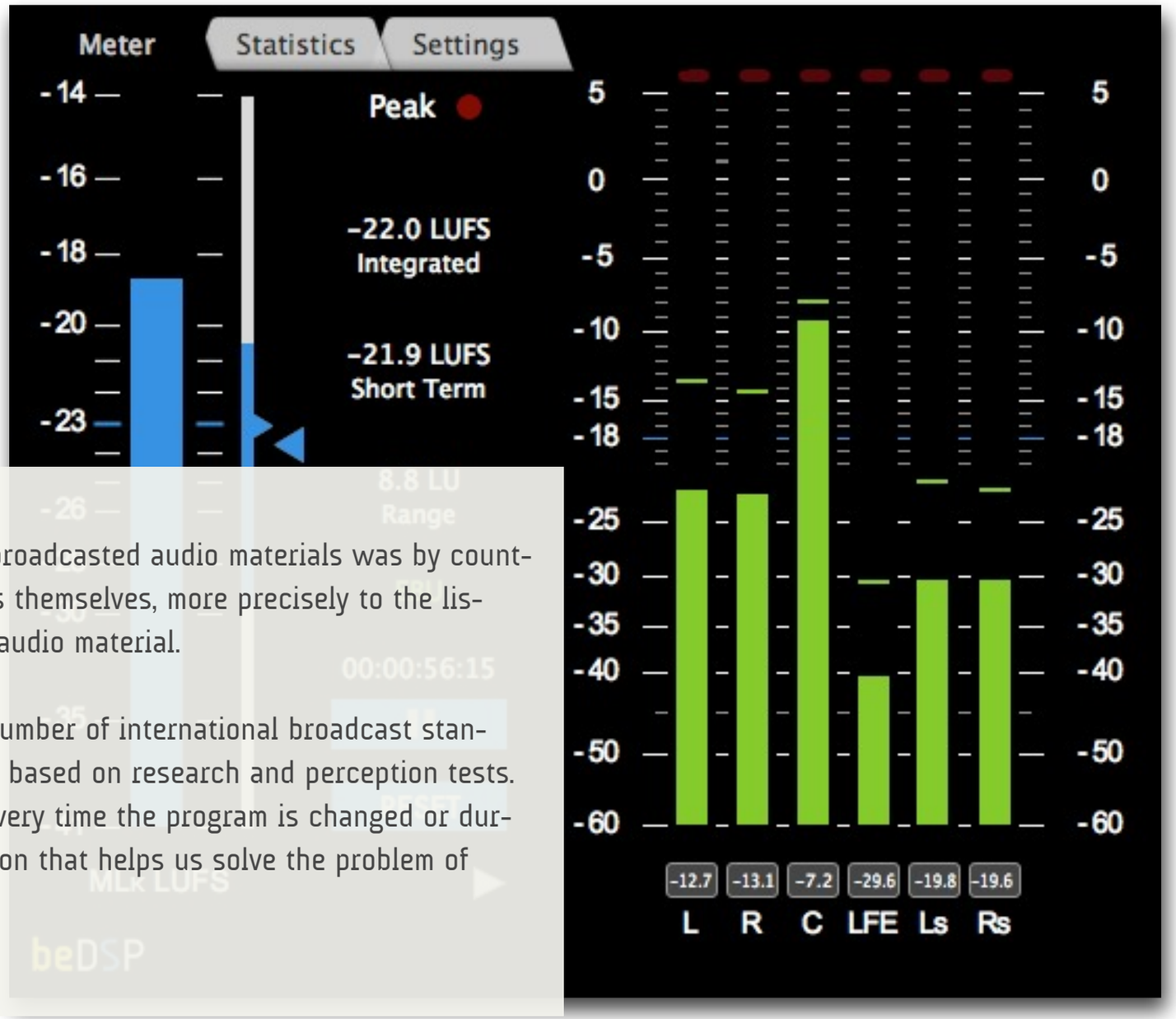
1. ALM 5.1 - Loudness and True Peak Meter

beDSP

Loudness and True Peak metering at your hand



In the past, the usual way of controlling the level of the broadcasted audio materials was by counting samples. Today, the attention switches to the listeners themselves, more precisely to the listener's audio perception and how loud they perceive the audio material.

In order to support this revolution in the audio world, a number of international broadcast standards have been developed (BS-1770, EBU R128, ATSC A/85) based on research and perception tests. Everybody knows how annoying is to adjust the volume every time the program is changed or during commercial breaks. But now, we have a solid foundation that helps us solve the problem of loudness oscillations.

ALM 5.1 is a key component in your mixing workflow. Based on the new ITU, EBU and ATSC loudness standards, the plugin offers you full Loudness and True Peak Metering for Mono, Stereo and 5.1 channel formats featuring measurements for Momentary, Short Term and Integrated Loudness, with Loudness Range and Max True Peak Level.

If your target is -23 LUFS (conform with EBU specification) or is -24 LUFS (conform with ATSC specification) or even if you want to use the relative gate of -10 LU or not, ALM 5.1 is all you need to control the loudness of your audio material. Both LU and LUFS scales are available, and you can set the start and the stop of your measurements or you can simply let the plugin do it by following the host transport.

If you prefer a higher resolution in the target zone you can use the +9 LU scale and if you prefer a higher dynamic range you can use the + 18 LU scale. With both value and bar indicator for Loudness Range you can decide if your audio needs more dynamic compression.

The interface is very flexible, you can use it in wide or narrow view. In both cases you don't have to worry about the peaks because the ALM 5.1 features peak holders and led indicators to let you know anytime a overload occurs. Two scales with different reference levels (-18 dBTP and -20 dBTP) are available for the True Peak Meter. Also ALM 5.1 takes into account all the inter-samples that can be missed in quantization. The plug-in features a timecode counter of the measurements and you can reset the measurements anytime you want.

There is an optional upgrade for the ALM 5.1 (standalone version) that allows you to have more control over your loudness by recording all the values measured in XML files.

Plugin Features

- Audio Loudness and True Peak Metering VST, AU and AAX plugins;
- Channel Formats: mono, stereo and 5.1;
- Full compliance with loudness standards : BS-1770 (rev.3), EBU R128 and ATSC A/85 specifications;
- Complete loudness measurements using universal descriptors: Integrated Loudness (Program Loudness), Momentary Loudness, Short Time Loudness, Loudness Range;
- Real-time metering for Momentary Loudness, Short Term Loudness and Loudness Range;
- True Peak Level Metering with peak hold;
- Max True Peak Level (calculated using inter-sample peaks that can be missed in quantization);
- Correct measurements for all the usual sample rates: 44.1 kHz, 48 kHz and multiples;
- Low CPU usage due to the plugin optimization;
- Logging files in XML format (optional upgrade for the standalone version).

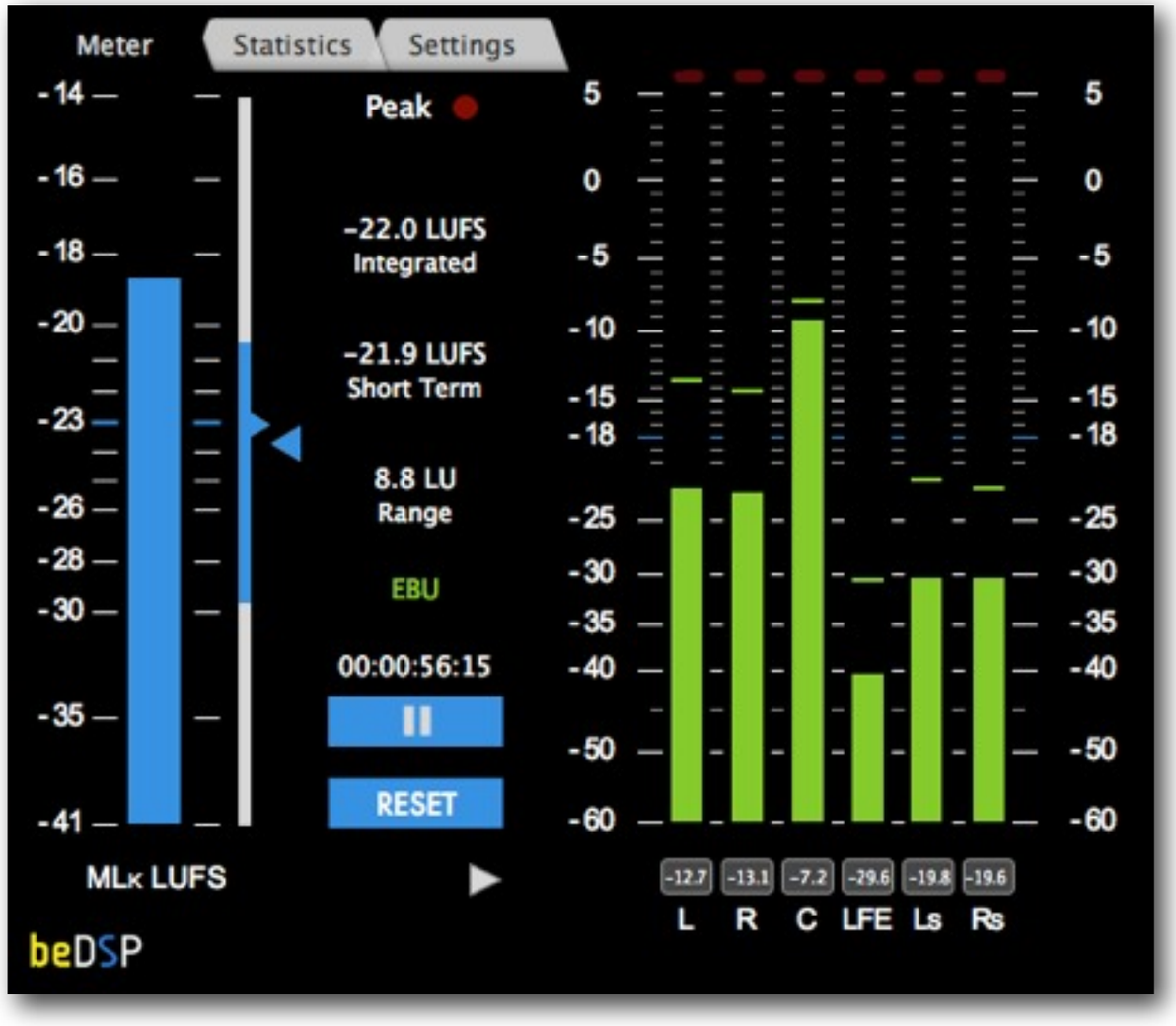


Figure 1: ALM5.1 - Wide view

Loudness Descriptors

- **Integrated Loudness or Program Loudness** (in LUFS[1] or LU[2]) - describes the long-term integrated loudness of an audio material from 'start' to 'stop'. This is measured using the specifications of international standards: for Europe - ITU-R BS.1770 (with no gate) or ITU-R BS.1770-3 (with gate at -10 LU) and for America - ATSC A/85. The gate is used to not integrate in the loudness measurement the audio signal below -10 LU (for Settings see page 9). This ensures that an audio material with long periods of silence will not be too loud after a possible loudness normalization.

- **Momentary Loudness** (in LUFS) - calculated with a time window of 400 ms;

- **Short Term Loudness** (in LUFS or LU) - calculated with a time window of 3 s;

- **Loudness Range** (in LU) – loudness dynamic range from 'start' to 'stop' that helps you decide if dynamic compression is necessary;

- **True Peak Max Level** (in dBTP[3]) - indicates the maximum value of the signal waveform in the continuous time domain (this value is calculated using inter-sample peaks that can be missed in quantization).

1. LUFS - Loudness, K-Weighting, referenced to digital Full Scale
2. LU - Loudness Units: 1 LU ≡ 1 dB
3. dBTP - deciBel referenced to digital Full Scale measured with a True Peak meter

2. Installation and Authentication

beDSP

Loudness and True Peak metering at your hand

Minimum System Requirements

MAC:
Dual Core CPU (Intel or AMD) with SSE2 support
2GB RAM
OSX 10.6

PC:
Dual Core CPU(Intel or AMD) with SSE2 support
2GB RAM
Windows 7

Available Formats

MAC:
VST 2.4 universal binary (32/64bits)
AU universal binary (32/64bits)
AAX (64bits)
Standalone

PC:
VST 2.4 universal binary (32/64bits)
AAX (64bits)
Standalone

Thank you for choosing ALM 5.1!
Once you have downloaded the package **ALM51Bundle** and you own a serial number, please follow the next steps for installation (for OSX or Windows) and authentication of your product.

OSX Installation

1. Double click on the icon ALM51Bundle.mpkg and an installation window will appear (see Figure 2). Press the **Continue** button to **start** the installation;

Figure 2: Destination of the installation

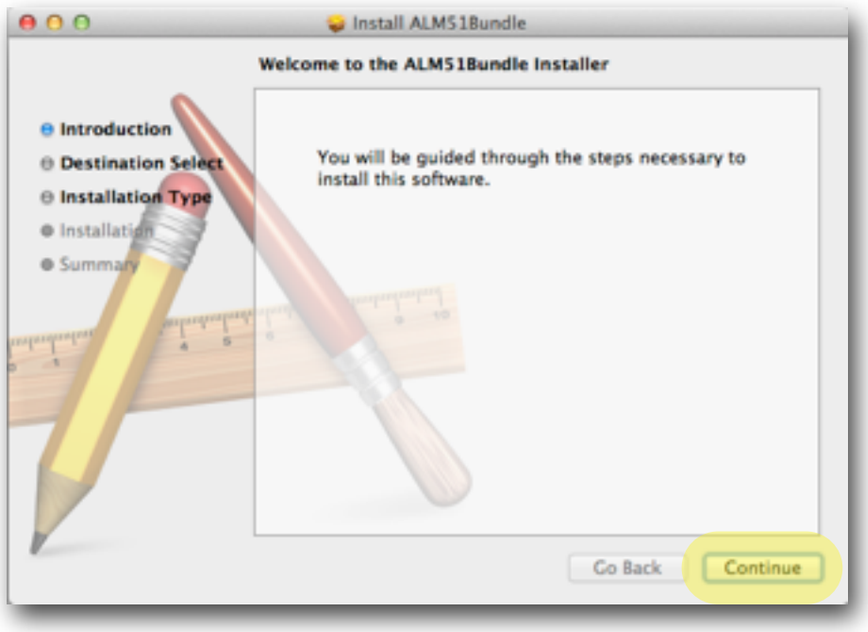


Figure 3: Installation window

2. **Select a Destination** for the installation (see Figure 3) and then press the **Continue** button;

3. Select the **Installation type** you want and then press the **Continue** button (see Figure 4);

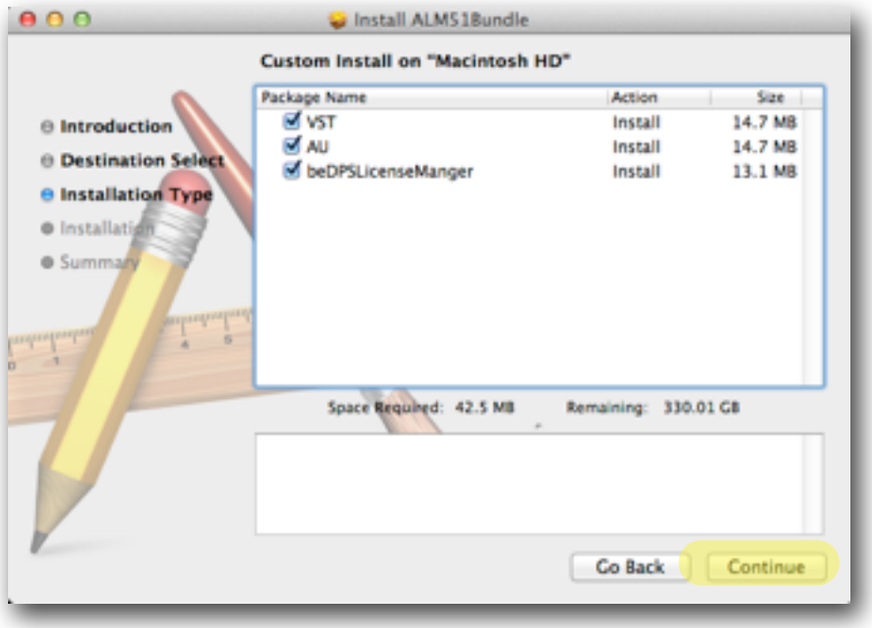


Figure 4: Installation Type

4. An information message will appear. Press the **Install** button if you have the necessary free **space** for a proper installation (see Figure 5);
5. Wait until the installation is completed and a confirmation window appears (see Figure 6). Press the **Close** button and pass to the **Authentication** part.

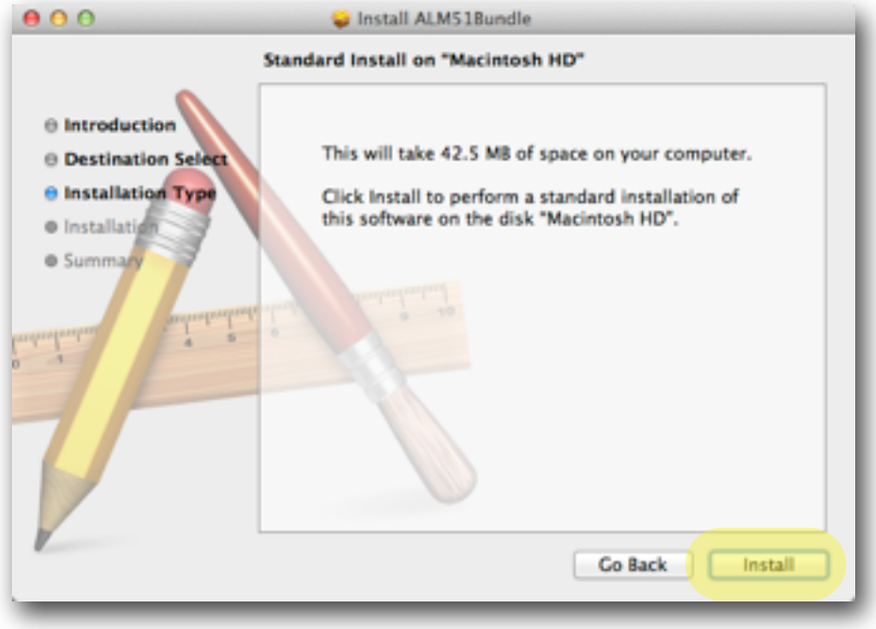


Figure 5: Free space necessary for the installation

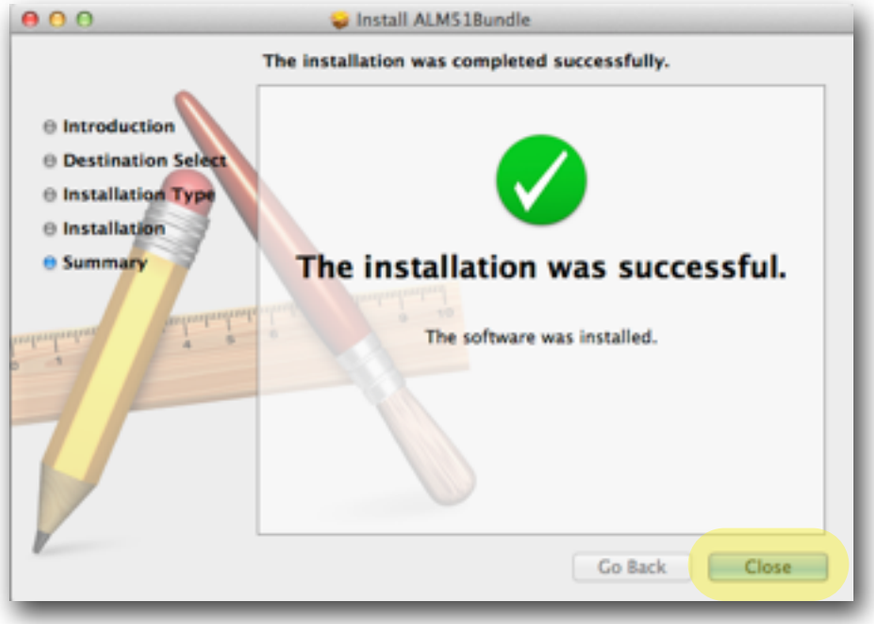


Figure 6: Installation completed

Windows Installation

Setup - ALM5.1
Welcome to the ALM5.1 Setup Wizard
This will install ALM5.1 version 1.0.0 on your computer.
It is recommended that you close all other applications before continuing.
Click Next to continue, or Cancel to exit Setup.
Next >
Cancel

Figure 7: Setup window

1. Double click on the icon ALM51Bundle and a setup window will appear (see Figure 7). Press the **Next** button to **c**ontinue the setup;
2. When the setup is ready to begin installing ALM5.1 on your computer (see Figure 8), press the **Install** button.

3. Press the **Finish** button to exit the Setup. You have the possibility to automatically launch the ALM 5.1 application (see Figure 9).

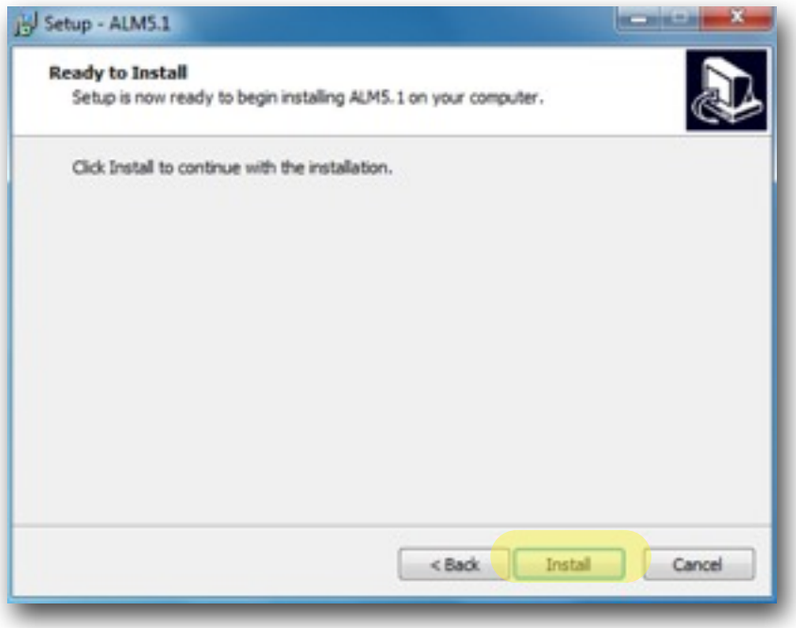

Setup - ALM5.1
Ready to Install
Setup is now ready to begin installing ALM5.1 on your computer.
Click Install to continue with the installation.
< Back
Install
Cancel

Figure 8: Installation start

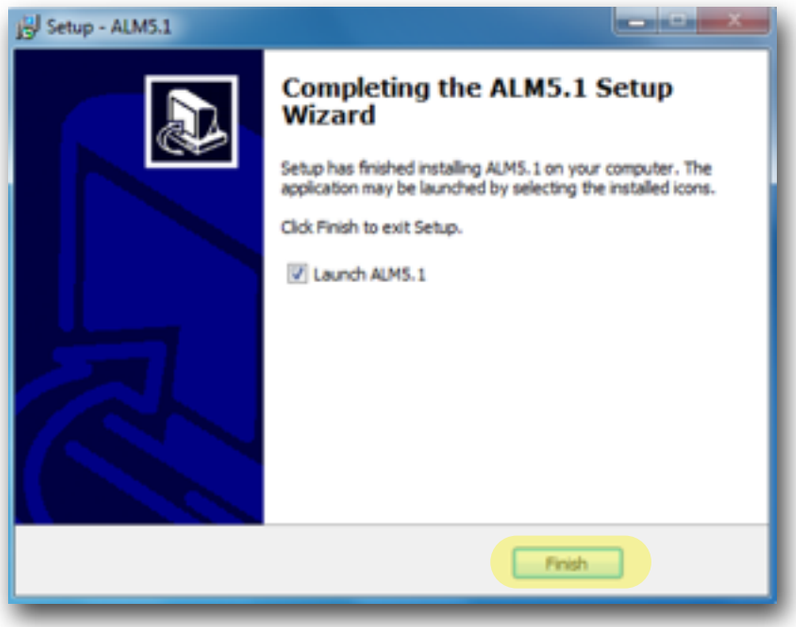

Setup - ALM5.1
Completing the ALM5.1 Setup Wizard
Setup has finished installing ALM5.1 on your computer. The application may be launched by selecting the installed icons.
Click Finish to exit Setup.
Launch ALM5.1
Finish

Figure 9: Installation start

Authentication

Go to the **Applications/ProgramFiles** where you will find the **beDSP** folder.
Double click on the beDPSLicenseManager icon and the main menu window will appear (see Figure 10) with three available options: **Online Activation**, **Offline Activation** and **Trial Request**. For any type of activation you must have a beDSP account.
If you don't have one, go to *www.bedsp.net/sign-up* and create your account.

Online Activation

1. If you have an internet connection, select **Online Activation**, otherwise you will have to select **Offline Activation** (see Figure 10).
2. If you want to activate the application on your computer, select **For this computer** (see Figure 11).

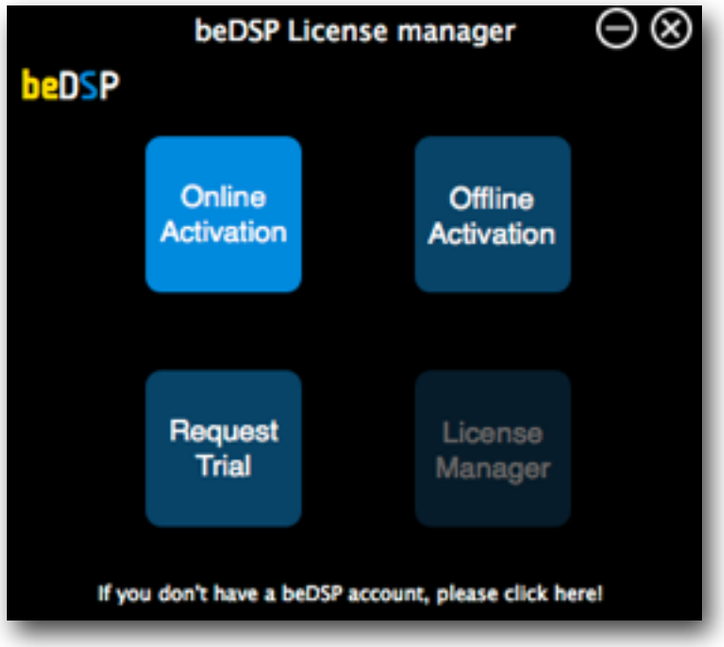


Figure 10: Main menu

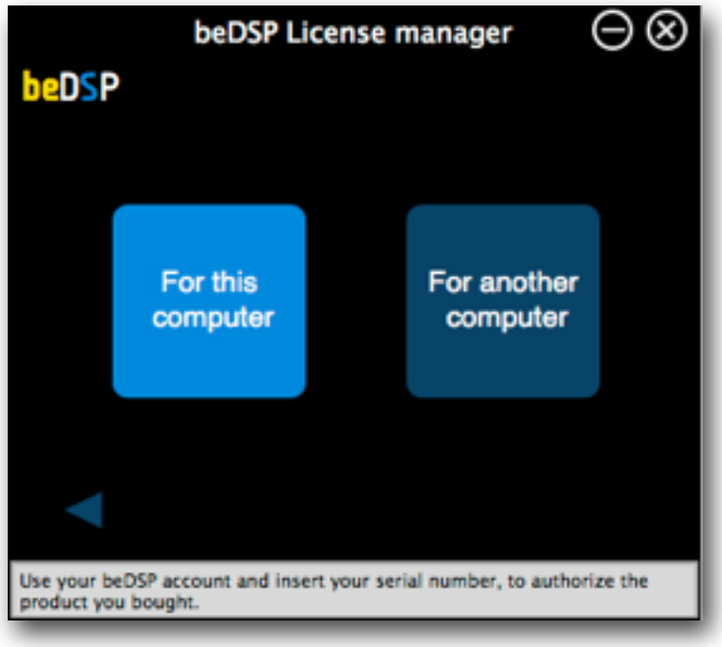

beDSP License manager
beDSP
For this computer
For another computer
Use your beDSP account and insert your serial number, to authorize the product you bought.

Figure 11: Online Activation options

3. An authentication window will appear (see Figure 12) .
Insert your beDSP username (same as your e-mail), password and serial number.

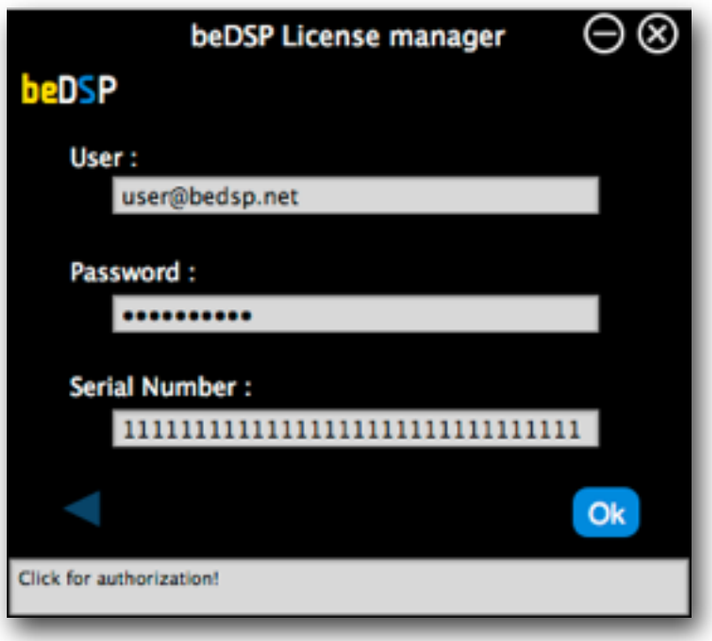


Figure 12: Authentication window

Figure 13: Confirmation window

4. A confirmation window will appear, that specifies the name of the product you have just activated and the type of license (see Figure 13).
Press **OK** and enjoy your product!

Offline Activation

If you don't have an internet connection, select **Offline Activation** from the main menu (see Figure 10), then **Generate Request** (see Figure 14).

1. Insert your serial number and select the folder where you want to save your license request.
2. After clicking ok, your license request will be saved. A window containing the license request will be revealed.
3. Copy your license request on a flash drive or any data storage device and move it on the online computer (this second computer must have the beDSP license manager installed and an internet connection so you can continue your activation).

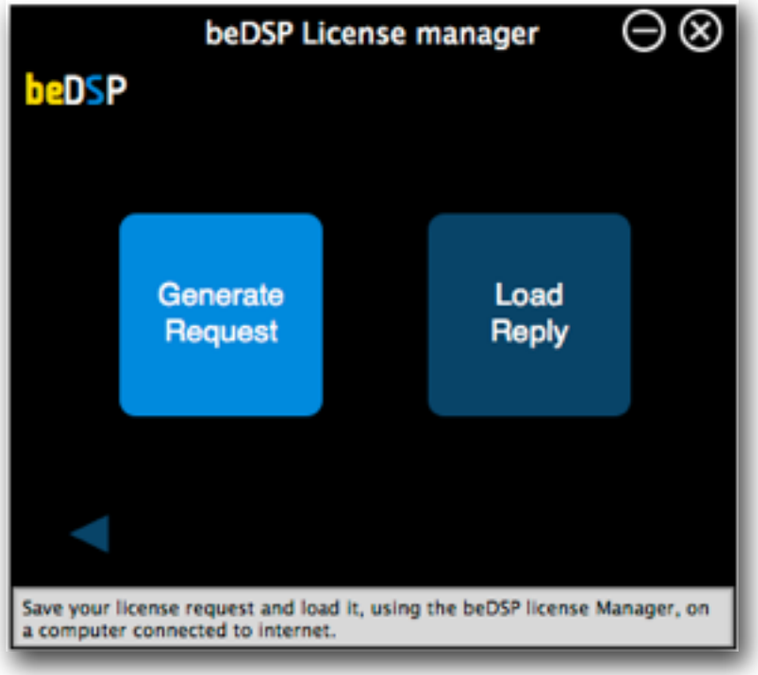

beDSP License manager
beDSP
Generate Request
Load Reply
Save your license request and load it, using the beDSP license Manager, on a computer connected to internet.

Figure 14: Offline Activation options

Figure 15: Generating the license request

4. From the **Online Activation** menu, pick **For Another Computer** (see Figure 11).

5. In the authentication window (see Figure 16), insert your beDSP username (same as your e-mail), password and load your license request. Click ok for authorization.

6. A folder with the license reply will be revealed, named “LicensesToMove”. This folder is saved in the same place you’ve copied your license request. Now move your license reply on the computer you wish to authorize.

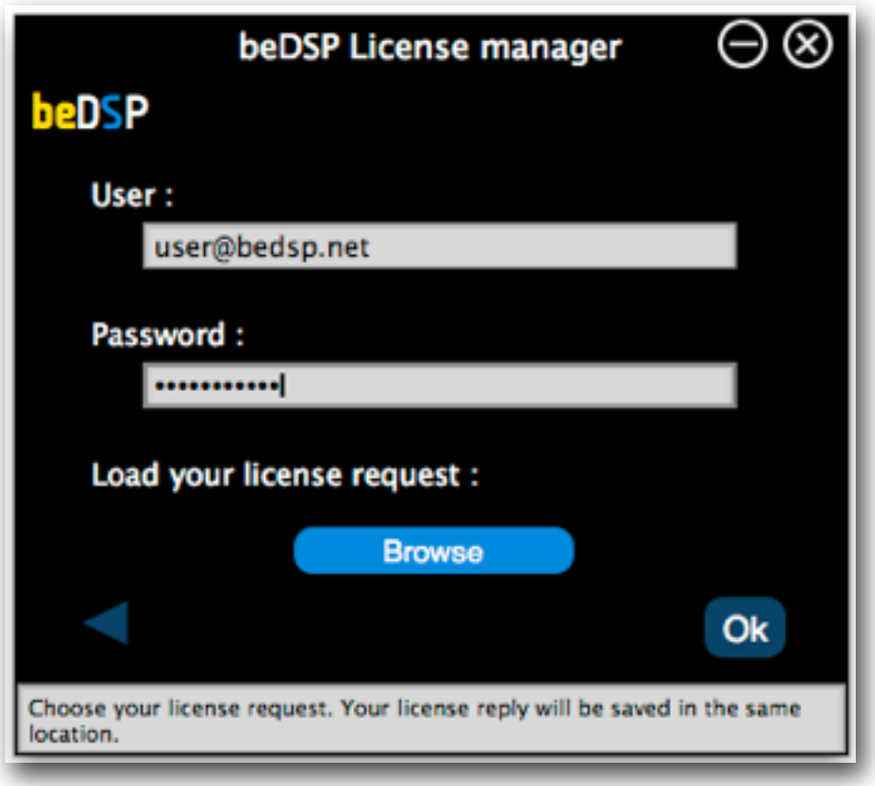


Figure 16: Authorizing your license request

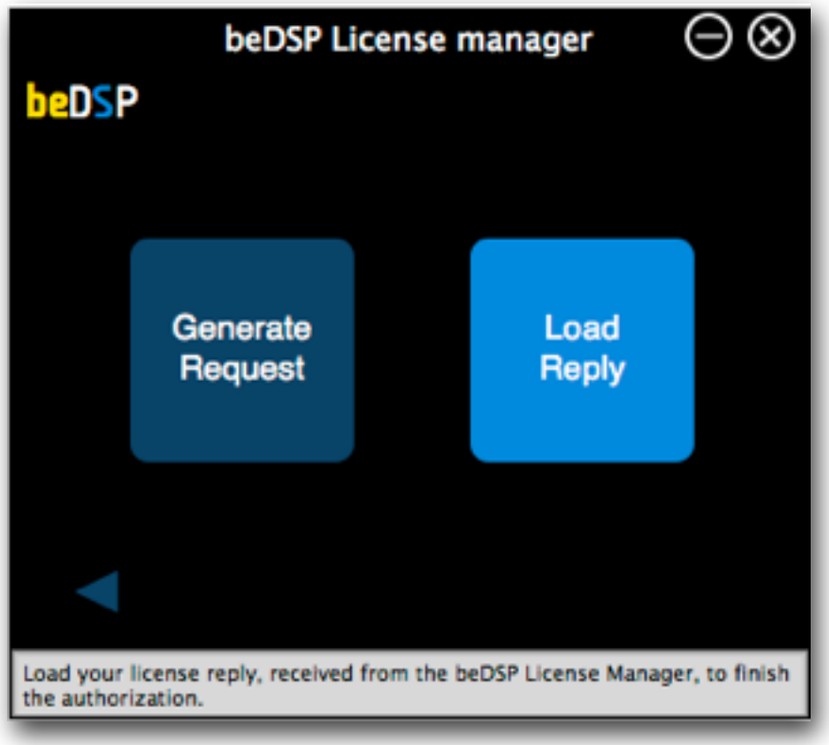

beDSP License manager
beDSP
Generate Request
Load Reply
Load your license reply, received from the beDSP License Manager, to finish the authorization.

Figure 17: Loading your reply

7. Back on your computer, from the main menu (see Figure 10), pick **Offline Activation**, then choose **Load Reply** (see Figure 17).
   A browser window will open and you have to select your reply.

8. After loading your reply, a confirmation window will appear, like the one from Figure 13. Press **Ok** and enjoy your product!

3. How it works?

In order to do a correct mix, first of all is necessary to calibrate your monitors and set a preliminary level for each track.. Next, if you constantly watch the Momentary or Short Time Loudness level you have the confirmation that the Integrated Loudness Level is in accordance with the target level. Also, if Maximum True Peak level is -1 dBTP, the phenomenon of 'hitting the wall' is less likely to occur.

ALM 5.1 has a simple structure, so you can focus on the mixing process, not on the usage of this plugin. There are three important parts:

- Loudness metering (1-see Page 19);
- True Peak metering (2-see Page 22);
- Statistics (3-see Page 23);
- Settings (4-see Page 24).

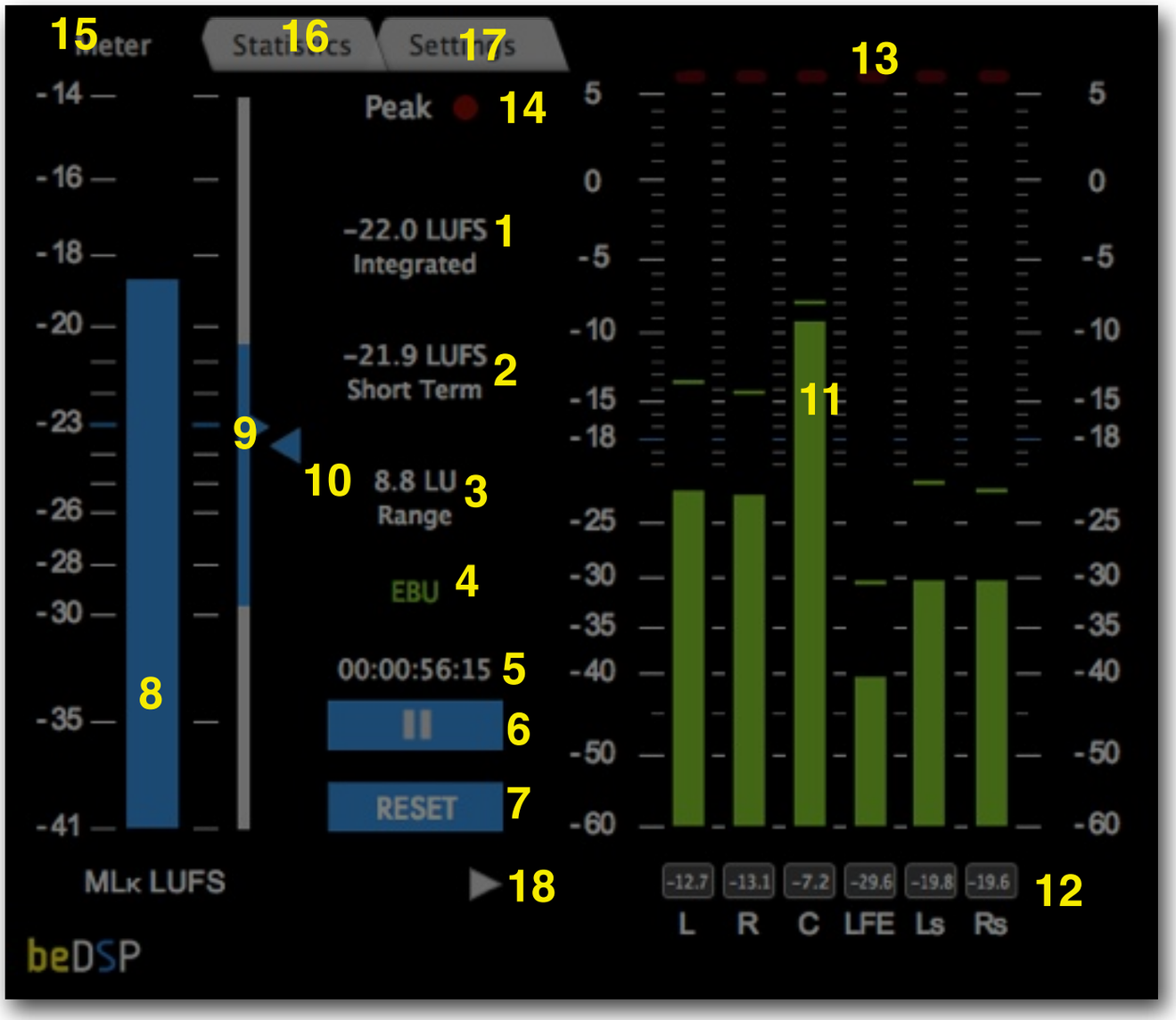


Figure 18: ALM5.1 - Interface

Interface

1. **Integrated Loudness or Program Loudness** (in LUFS);
2. **Short Term Loudness** (in LUFS);
3. **Loudness Range** (in LU);
4. Measurements can be done according with **EBU** or **ATSC** specifications;
5. **Time counter** for the duration of Integrated Loudness measurement;
6. Play/Stop the measurements for Integrated Loudness and Loudness Range (which is active only when the setting "Follow Transport" is not active);
7. RESET all the measurements;
8. Real time **Moment Loudness Meter**;
9. **Loudness Range** bar Indicator;
10. **Short Term Loudness** indicator;
11. Real time **True Peak Meter**;
12. **Max True Peak Level** (in dBTP);
13. **Peak Led** indicators;
14. **Peak Led** indicator;
15. **Meter Window**;
16. **Statistics Window**;
17. **Settings Window**;
18. **Toggle button** between Wide and Narrow View.

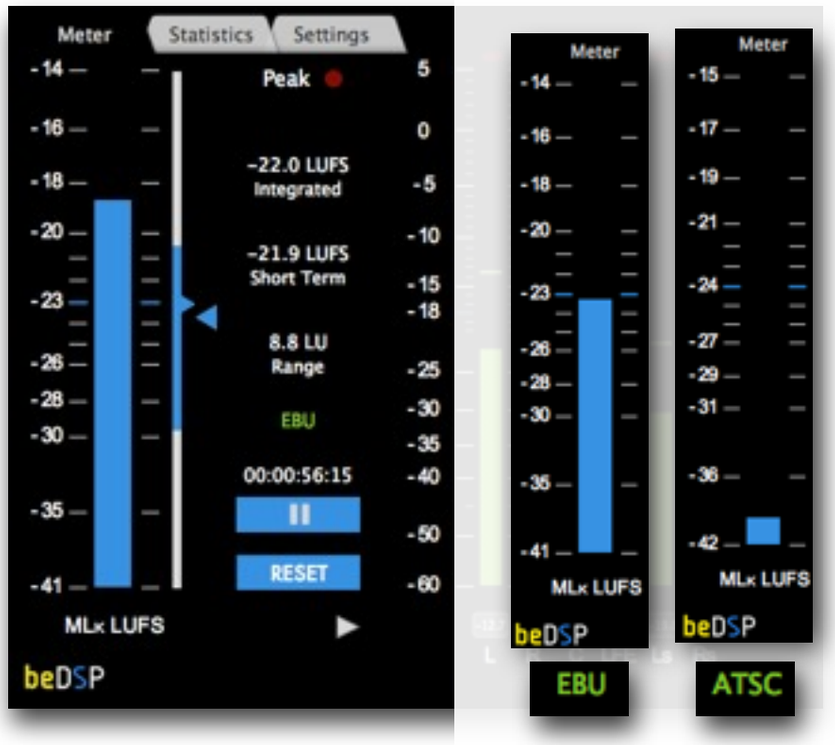


Figure 19: ALM5.1 - EBU and ATSC scales for +9LU

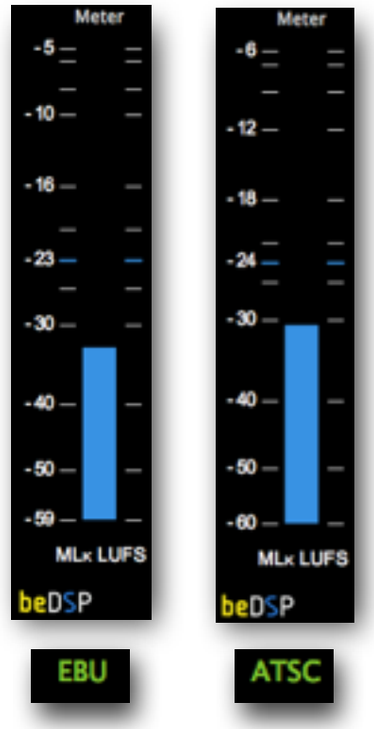


Figure 20: ALM5.1 - EBU and ATSC scales for +18LU

Loudness Metering

ALM 5.1 not only calculates the values of the most important descriptors specified by the standards (Integrated Loudness -Program Loudness, Momentary Loudness, Short Time Loudness, Loudness Range), but offers you the possibility of choosing the scale for Momentary Loudness according to your needs. There are two options that can be accessed in the Settings window (see Page 24):

- The **standard**: EBU with reference level at -23 LUFS and ATSC with reference level at -24 LUFS (see Figure 19 and Figure 20).
- The **scale: +9 LU** for a good resolution in the reference level zone (see Figure 19) and **+18 LU** for a bigger dynamic range (see Figure 20).

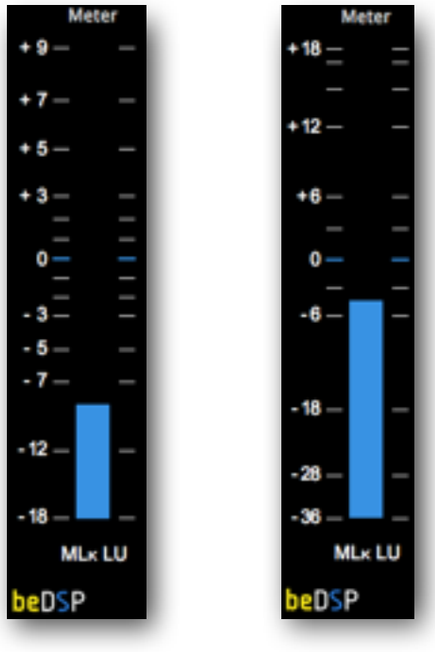


Figure 21: ALM 5.1 – Relative scales for +9 LU (left) and +18 LU (right)

Also, you can use the relative scales, with the reference level of 0 LU (see Figure 21). In this case the scale is the same for both EBU and ATSC standards.

For the start, the measurements for Integrated Loudness and Loudness Range are done considering the gate at -10 LU. In this case, the name of the standard is green. If you chose no gate, the name of the standards will be red (see Figure 22).

Figure 22: ALM 5.1 – No gate

ALM 5.1 offers you the flexibility to change the frame size:

- When you first open it, the plugin has the **Wide view** with both Loudness Meter and True Peak Meter (see Figure 1).
- Pressing the toggle button you can access the **Narrow view** with only the Loudness Meter (see Figure 23). Note that there is a Peak Led indicator to let you if a peak occurs.

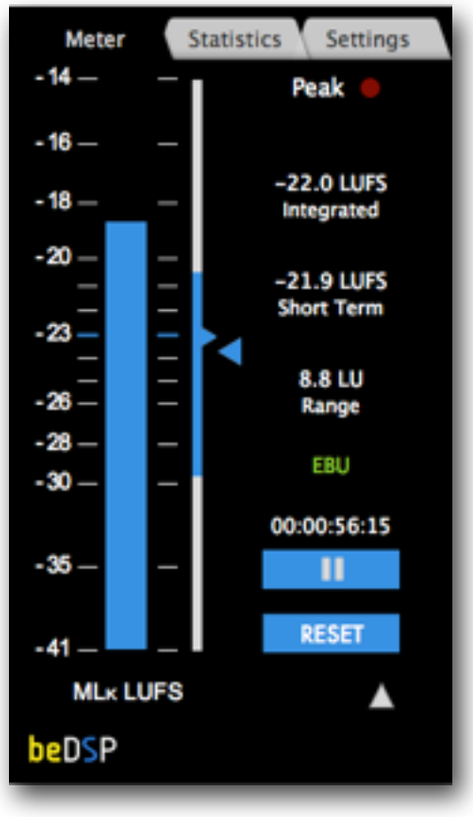


Figure 23: ALM5.1 – Narrow view

For the Integrated Loudness ALM 5.1 uses a color code. This way, you will know where your program loudness is situated according to the accepted tolerance of each standard.

The accepted tolerance zone is basically the range of loudness that is comfortable to a listener. Note that the Integrated Loudness may not be constant through the program. It can vary within a zone according to the content requirements.

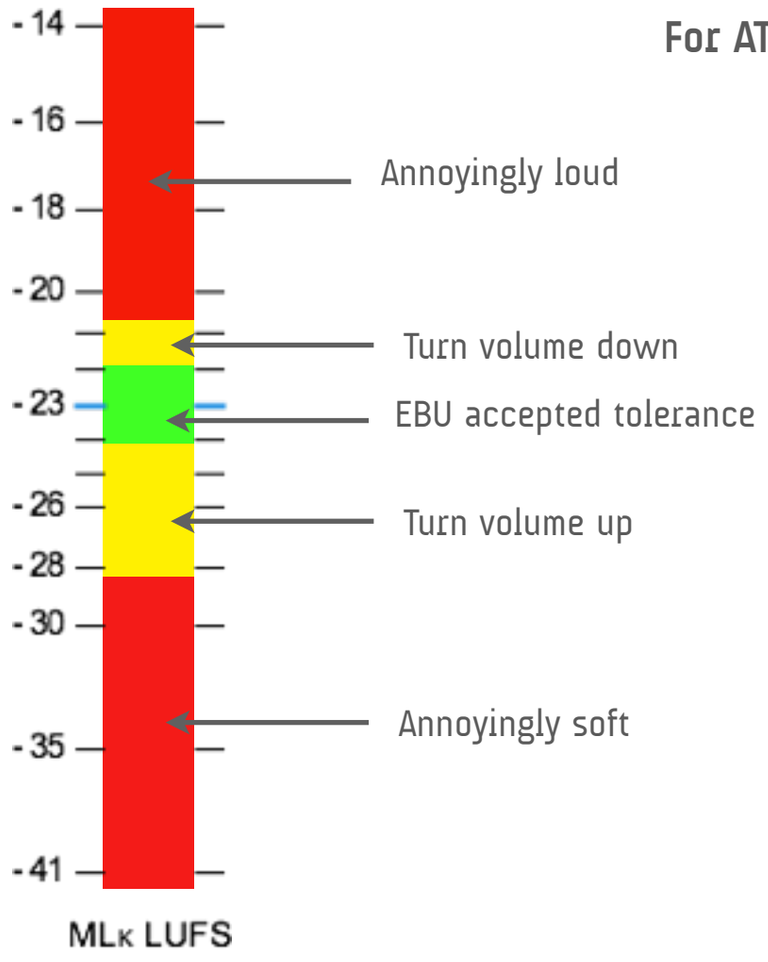
The color of Integrated Loudness parameter is:

- green, if the Integrated Loudness matches the standard's specifications

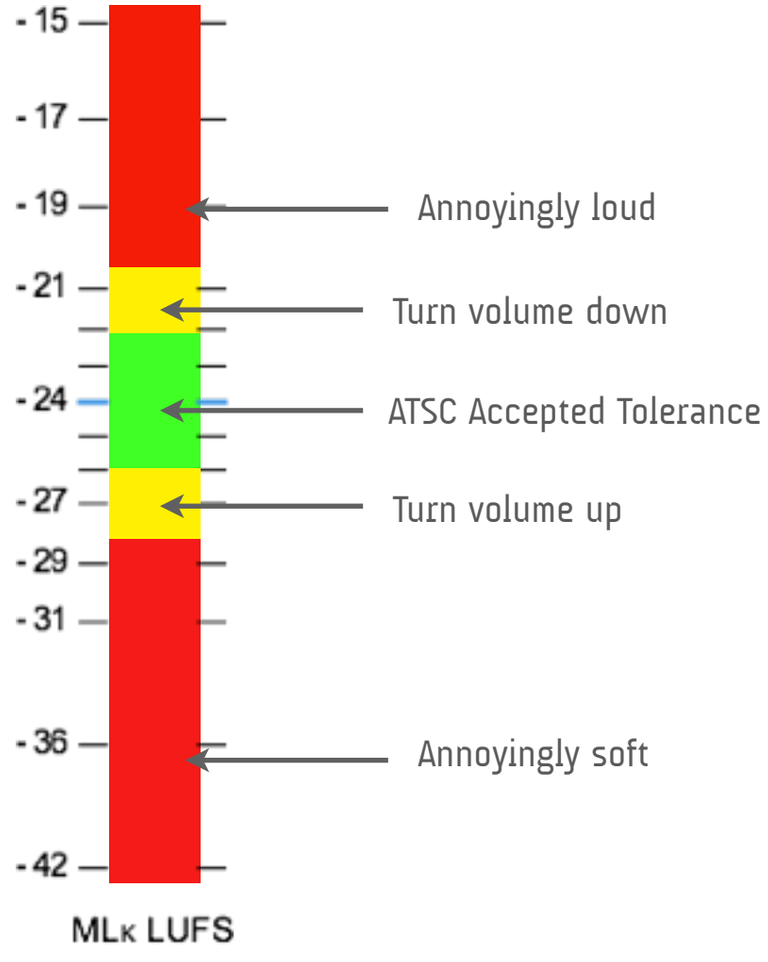
- yellow, if it's around the standard's specification, but you must turn the volume up/down

- red, if the material is annoyingly loud/soft

For EBU specifications:



For ATSC specifications:



True Peak Metering

ALM 5.1 offers you real time True Peak Metering with peak hold for mono, stereo and 5.1 channels. Beside this, the plugin gives you the possibility to configure your measurements by accessing the Settings window (see Page 24).

You can choose the True Peak reference level -18 dBTP or -20 dBTP (see Figure 24), the Peak Holding Time and the Overload Hold.

Note that for the case when you use the narrow view of the plugin, you still can see the peaks indicated by the Peak led. Also, the peaks are on until you reset the measurements or press on them.

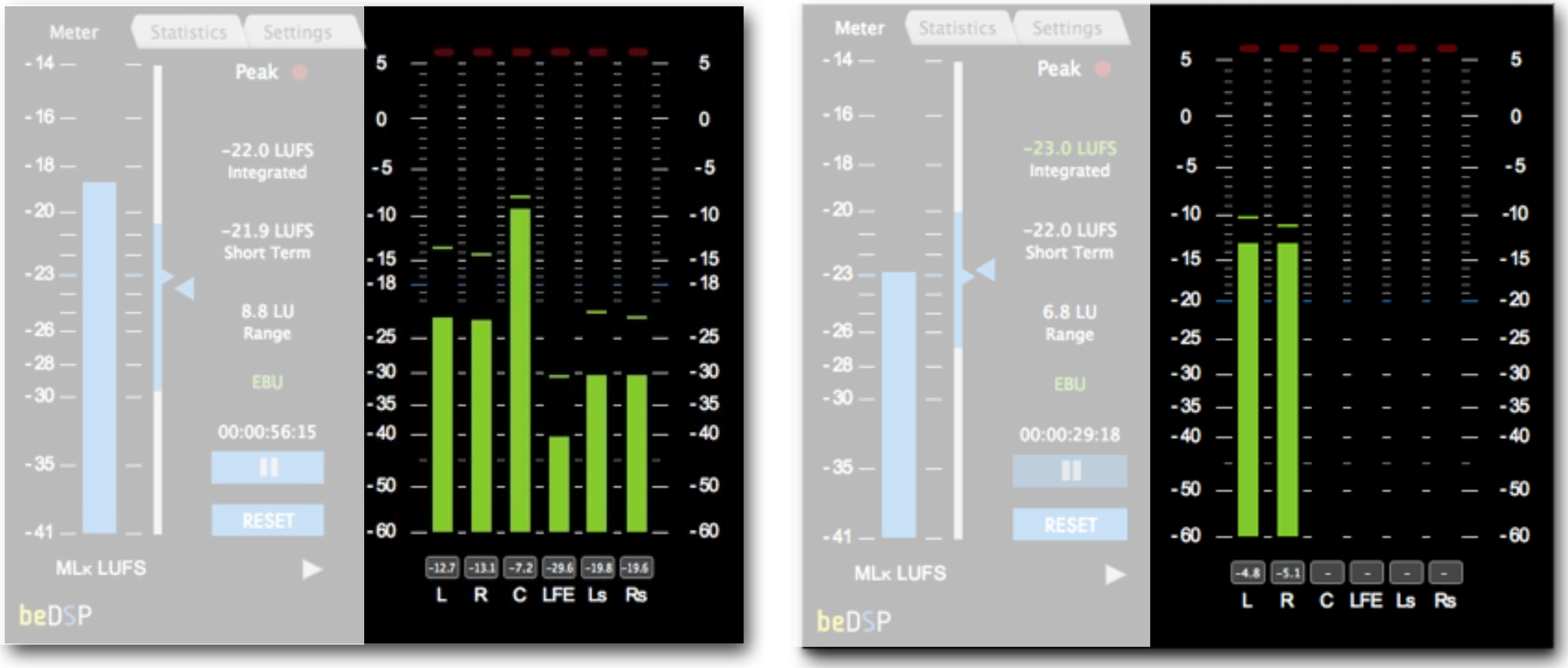


Figure 24: ALM5.1 - True Peak Metering ref. lev -18 dBTP (left) and ref. lev -20 dBTP

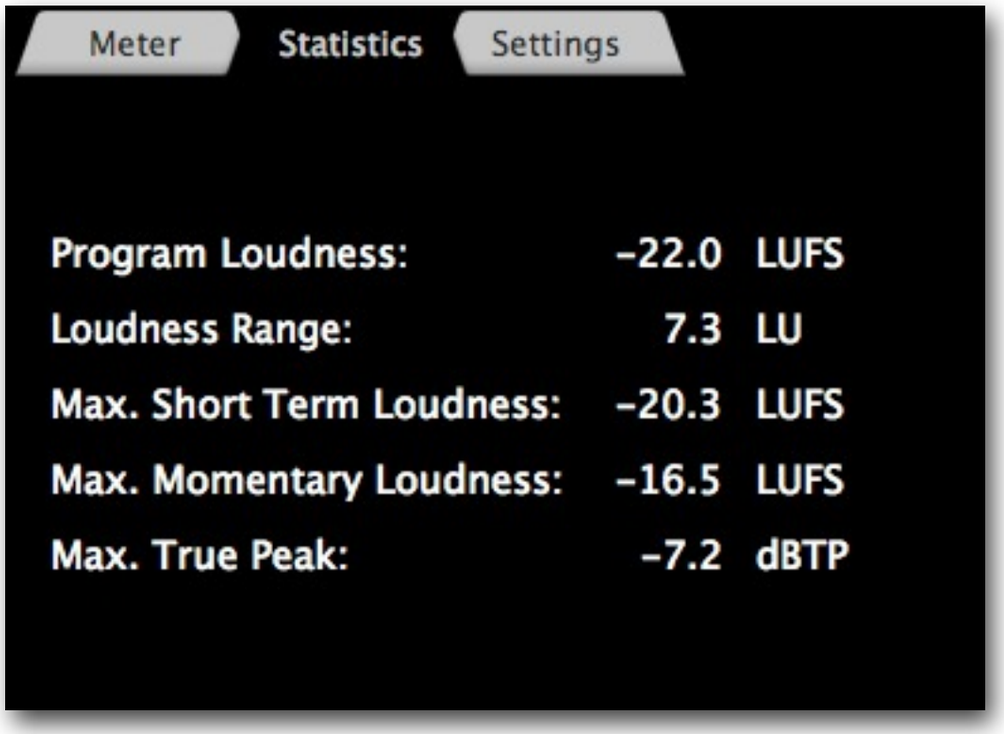


Figure 25: ALM5.1 - Statistics Window

Statistics

The second window of ALM 5.1 offers real time values of main loudness descriptors of your program:

- Program Loudness
- Loudness Range
- Max. Short Term Loudness
- Max. Momentary Loudness
- Max. True Peak

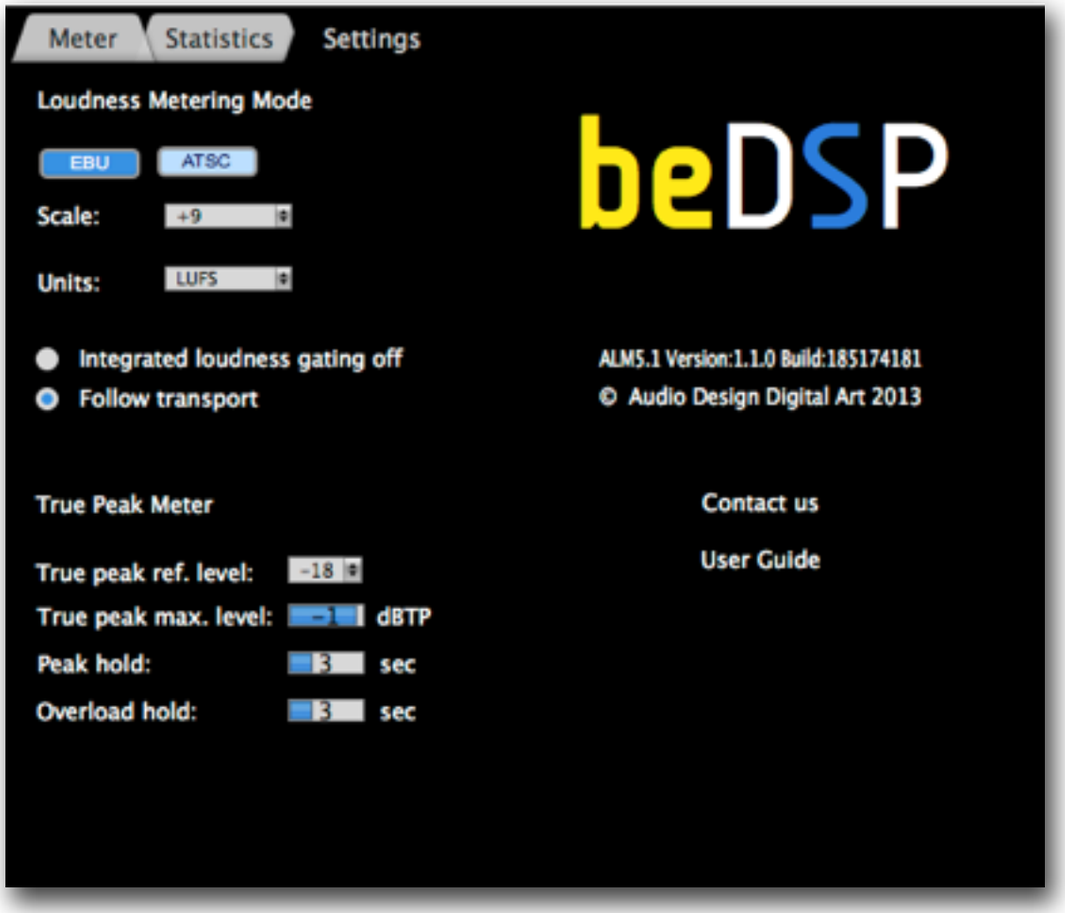


Figure 26: ALM5.1 - Settings - plugin version

Settings - plugin version

- **EBU** or **ATSC** specifications ;
- **Loudness Scales** : +9 LU and +18 LU;
- **Loudness Units** : LUFS or LU;
- **Integrated Loudness gating off** : the gate at -10 LU is not used and the Integrated Loudness and Loudness Range values are calculated for the entire audio material;
- **Follow transport** : the measurements are done only when the audio material is in 'play' mode;
- **True Peak ref. level** : -18 dBTP and -20 dBTP;
- **True Peak max. level** : from -5 dBTP to -1 dBTP. Sets the maximum value of the signal waveform calculated using inter-sample peaks that can be missed in quantization. Above that value the peak led indicators are red (the level is the same for all the channels);
- **Peak hold** : from 0 s to 10 s. Represents the period of time the Peak holders are on;
- **Overload hold** : from 0 s to 10 s. Represents the period of time the Peak Led indicators are on.

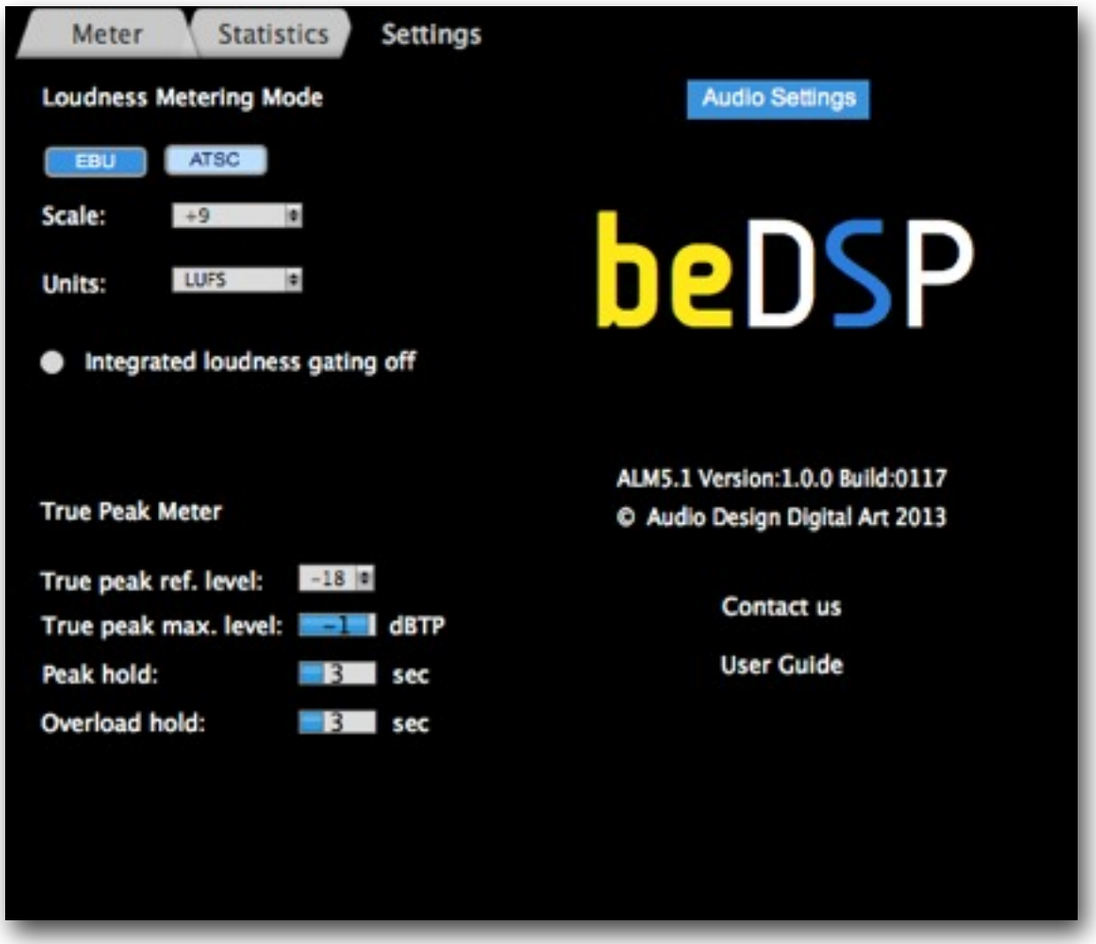


Figure 27: ALM5.1 – Settings – standalone version

Settings – standalone version

- **EBU** or **ATSC** specifications ;
- **Loudness Scales** : +9 LU and +18 LU;
- **Loudness Units** : LUFS or LU;
- **Integrated Loudness gating off** : the gate at -10 LU is not used and the Integrated Loudness and Loudness Range values are calculated for the entire audio material;
- **True Peak ref. level** : -18 dBTP and -20 dBTP;
- **True Peak max. level** : from -5 dBTP to -1 dBTP. Sets the maximum value of the signal waveform calculated using inter-sample peaks that can be missed in quantization. Above that value Peak Led indicators are red (the level is the same for all the channels);
- **Peak hold** : from 0 s to 10 s. Represents the period of time the Peak holders are on;
- **Overload hold** : from 0 s to 10 s. Represents the period of time the Peak Led indicators are on.

Audio Settings - standalone version

The ALM 5.1 standalone version offers complex I/O Audio Settings and routing capabilities. This way you can take advantage of the same features even if your system doesn't support VST, AU or AAX plugins. You can choose:

- Input and output audio interface
- Sample Rate
- Audio buffer size
- The inputs and the outputs for L, R, C, LFE, LS, RS

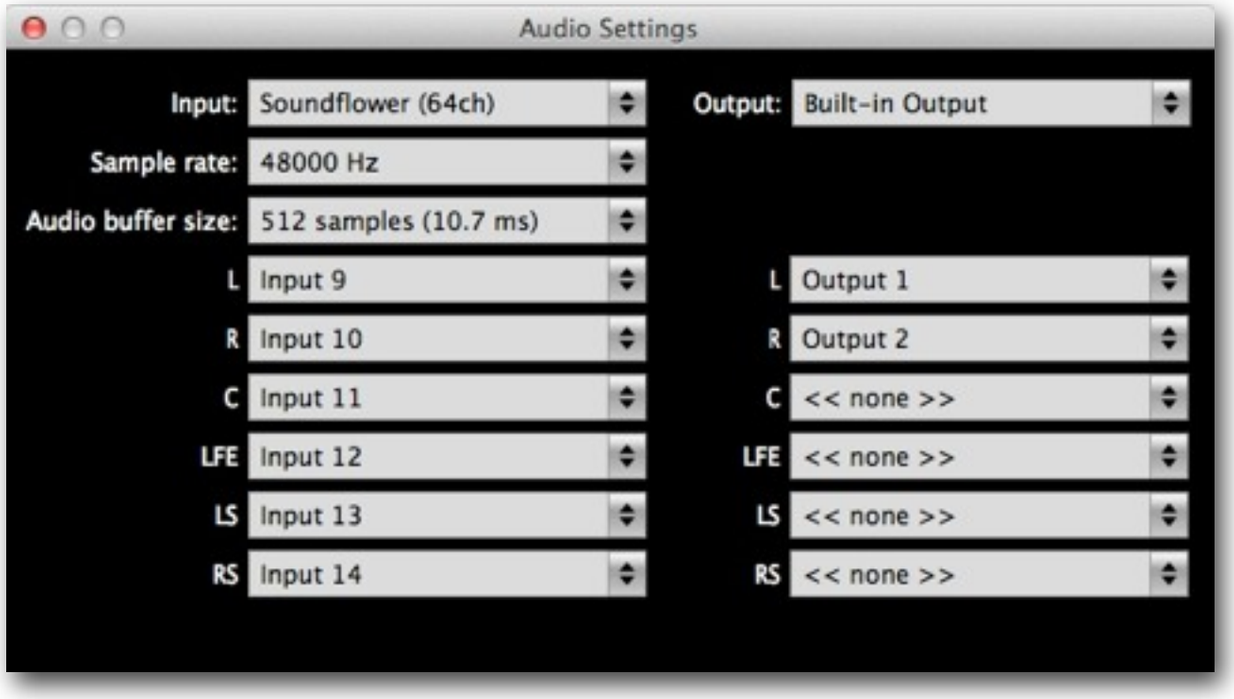


Figure 28: ALM5.1 - Settings - standalone version

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beDSP

ALM 5.1

Loudness and True Peak Meter
VST, AU and AAX plugin based on BS1770 (rev.3) and EBU R128

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